
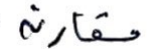
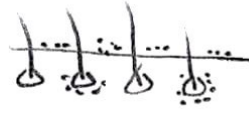


# Bacterial

1 - Normal Skin Flora →	1	11 - Folliculitis →	12	• Trichomycosis axillaris →	20
2 - Impetigo →	2	• superficial		• Pitted Keratolysis →	
Bullous - non Bullous		1 - Boerhaave →	13	16 - Pseudomonas →	21
3 - SSSS →	5	2 - Pseudofolliculitis →	14	17 - Acute meningococemia →	22
4 - TEN →	6	3 - Acne necrotica →	14	18 - Bartonella →	23
5 - Desmoglein →	6	• Deep		19 - Blastomycosis →	24
6 - Erysipeloid →	7	1 - Sycosis →	14-1	Spirachetes →	24
Erysipelas		2 - Folliculitis keloidalis →	15-1	20 - Lyme Disease →	25
Cellulites		3 - Furunculosis →	14-2	21 - Acrodermatitis Atrophicans →	27
7 - pseudocellulitis		• Perforating Folliculitis →	15-2	22 - Botryomycosis →	28
Strept. Intertrigo		• Eosinophilic		23 - Actinomycosis →	29
Blistering Distal dactylitis	8	12 - Follicular occlusion	16	24 - Actinomycetoma →	30
Perianal strept Disease		Triad		Rickettsia	
8 - Scarlet Fever	9	13 - Hidradenitis Suppurativa →	17	Nocardiosis	
9 - Toxic Shock Syndrome	10	14 - Anthrax →	19	25 -  →	
10 - Necrotizing Fascitis	11	15 - Corynebacterium →	20	26 -  →	
		• Erythrasma →	20	- Botryo - Actino	



# ★ Normal skin flora ★



→ surface of skin +  
Hair follicles of normal individual

Colonized & Harmless Microorganisms living as → Commensals to protect

The skin from Bacterial infections

- (By)
- Competition for pathogenic microorganisms
  - Hydrolyzing lipids of sebum to produce free fatty acids → Toxic to Bacteria

## → Resident skin flora consist of:

Organism	Location in Body
<b>Aerobic Cocci:</b> Staph. epidermidis Staph. aureus	- all Body sites - Intertriginous area
<b>Aerobic Coryneform:</b> Corynebacterium minutissimum	- Intertriginous area (axilla - groin)
<b>Anaerobic Propionibacteria:</b> P. acne P. granulosum	- Sebaceous glands + follicles
<b>Gram -ve:</b>	- axillae, perineum antecubital fossa
<b>Yeast:</b> Malassezia furfur	- Skin Rash in sebaceous gland of scalp

## → Involvement of in skin Disease

### Staph. aureus

#### 1- Direct infection:

- Impetigo
- Carbuncle
- Ecthyma
- Syphilis
- Folliculitis
- Fractures

#### 2- 2ry infection:

- Eczema
- Infestations
- Ulcers

#### 3- D.t effect of Bacterial toxin:

- SSSS
- TSS
- Staph. Scarlatina

### Streptococcus

#### 1- Direct infection:

- Impetigo
- Ecthyma
- Cellulitis
- Vulvovaginitis
- Necrotizing Fasciitis
- Perianal infection
- Streptococcal ulcers

#### 2- 2ry infection:

- Eczema
- Infestations
- Ulcers

#### 3- from Circulating Toxin

- Scarlet fever
- Toxic shock like syndrome

#### 4- D.t Allergic Hypersensitivity to strept antigen:

- Erythema Nodosum

## ★ Methicillin-Resistant Staph. Aureus MRSA ★

- 2 Types → Community associated (CA-MRSA)  
Hospital acquired (HA-MRSA)

- **Furunculosis**: most frequent manifestation of CA-MRSA  
 → evolve to → Large abscess, Cellulitis, Necrosis  
 → Impetigo - SSSS - folliculitis

- Life threatening → Septic shock - TSS - Necrotizing Fasciitis
- **Causes** production of penicillin Binding protein PBP



# ◎ Impetigo ◎

## I.D.F:

- Acute - Contagious Superficial pyogenic infection of skin
- two types: → non-Bullous  
→ Bullous

## -treatment:-

① Remove of Crusts: Olive oil  
Hydrogen Peroxide

② Topical Antibiotics:

- Tetracycline
- Bacitracin
- gentamycin
- Mupirocin
- Fusidic acid

③ Systemic Antibiotics:

- Cif Fever - lymphadenopathy)
- extensive infections - scalp  
ears  
eyelids

- Penicillin
- Erythromycin
- cloxacillin
- Azithromycin → 2 caps 500 mg  
Daily for 3 days
- Erythromycin Resistant S. aureus  
→ Amoxicillin + clavulanic acid  
(Augmentin)

④ Ht of predisposing causes  
e.g: pediculosis  
Scabies

⑤ Decolonizing the nares  
and skin: if Recurrent  
Staph impetigo

⑥ Traditional penicillin  
was inferior to Erythromycin  
and penicillinase-Resistant  
Penicillin

## • Varieties of Non-Bullous impetigo :-

① Circinate:

with peripheral extension of lesion  
healing in the center

② Crusted:

- on Scalp as complicating of pediculosis

- Crusts → Thick, gummy  
→ Remain adherent to the  
lesion for Long periods

- Occipital + Cervical L.N →  
enlarged and tender

③ Ecthyma: ulcerative  
impetigo

- Formation of adherent Crusts

- Beneath → which purulent  
irregular ulcers occur

- Healing after few weeks with  
Scarring

- Site: Buttocks, thigh, leg



## Non-Bullous impetigo (Contagiosa)

### Bacteriology: Staph. aureus

- Intact Corneum is the most important defense against invasion of Bacteria

- group A streptococcus (GAS)
- lesser Degree

Both are

- PF:**
1. overcrowding + poor Hygiene
  2. Itchy skin Disease: Pediculosis, Scabies
  3. Hot humid Climate more in Summer

### Pathogenesis:

1. Infection occurs at site of scratching Insect Bite  
atopic dermatitis  
minor Trauma  
abrasions  
laceration  
Burns
  - Skin infection - Varicella
2. Disruption of skin Barrier → allow Bacteria to adhere and invade and establish the infection

### Histopathology:

- Subcorneal Pustule = numerous Neutrophils
- Few Acantholytic cells
- St. malpighii → Spongiosis = neutrophils migrating through it

## Bullous impetigo

### Staph aureus only

3

- Through staph Exotoxins → SSSS  
↳ ETA, ETB
- Both SSSS + Bullous impetigo → Transmissible → lead to epidemic in nurseries
- in SSSS → No staph can grow from Bullae, as the organisms are present at Distant focus e.g. purulent conjunctivitis, Pharyngitis
- SSSS → Rare D. ability of adult Kidney to excrete exfoliation

1. Staph. aureus → elaborate several exfoliative Toxins
  2. Staph → Cultured from fluid within the Blisters of Bullous impetigo
  3. Consider → Localized form of SSSS
  4. in Both Diseases → Blister formation mediated by exfoliative Toxin Binding to Desmosomal protein and cleaving its extracellular Domain **Dsg1**
- Acantholysis within the Epidermal granular layer

1. cleave of upper Epidermis within the granular layer
2. Neutrophils → migrate through spongiotic epidermis into Blister Cavity
3. Acantholytic cells may be seen
4. Upper Dermis polymorphous infiltrate
5. No necrosis of Epidermis




## Non-Bullous

### • Clinical feature:

Age: preschool children

Site: Face (around mouth - nose)  
limbs - scalp (in pediculosis)  
except palm + soles

Lesion:  Thin walled vesicle on Erythematous Base  
→ Soon Rupture → exuding serum Dries →  
Form Yellowish-Brown (Honey-color) Crusts  
• Crust → Dry → Separate → leaving Erythema:  
• Erythema → Fades without Scarring

\* Regional adenitis + Fever → in sever Cases

### Clinical Course:

- Benign - Self limited process
- Untreated lesions tend to Resolve within 2 weeks without Scarring

### Complications:

- post Strept. Acute glomerulonephritis
- Specially in Cases of Strept pyogenes M  
(Types 1, 4, 12, 25, 49)
- Latent period → 3 weeks Before develop of AGN
  - Throat infection
- Latent Period → 10 Days

## Bullous

Age: All ages - Common in Childhood - New Born (Neonatorum)

Site: Face

lesion can occur anywhere including palm  
trunk - Buttocks - perineum sole

Lesion:

Bullae are Less Rapidly Rupture (persist 2-3 days)  
↓  
Become Much Larger

• The content → First clear, later → Cloudy

• After Rupture → Thin Brownish Crusts

\* Usually No Systemic Symptoms, But can associated w/ weakness

### Clinical Course:

Untreated ptn heal in 3-6 weeks

- in infants, young children and adults with immunodeficiency or Renal failure → Exfoliative Toxin may Disseminate and cause SSSS



# Staph. Scalded Skin Syndrome

Ritter's Disease  
Lyell's Disease

1. Caused By: Hematogenous Dissemination of same exfoliative toxins

## 2. Epidemiology:

- Mainly → Infancy + childhood
- Rarely → Adults & Renal Failure or Immunocompetence

## 3. Etiology:

Staph. aureus of phag gp II  
mostly Type 71  
↓  
which elaborate 2 exotoxins  
↳ epidermolytic Toxin  
A + B (ETA - ETB)

## 4. Pathogenesis:

Blister formation mediated by:  
exfoliative toxin → Binding to  
Desmosomal protein Desmoglein 1  
→ cleaving its extracellular Domain  
→ Acantholysis within the epidermal granular layer

5. Histopathology: = Bullous Impetigo  
But Less or NO inflammatory infiltrate

## 6. Clinically:

Generalized form  
Ritter's

- Begin suddenly & Diffuse - Tender
- Red skin → simulating "Scald"
- Large sterile Flaccid Bullae

Rupture immediately  
→ large sheets of superficial  
Epidermis separate + exfoliate  
- Healing: within 7-14 Days  
- Mortality: in 2-3% of phs

Scarletiform "Abortive"

- Early: Erythrodermic
- Final: Desquamation
- Bullae stage Doesn't occur

→ Nikolsky sign → +ve

## 7. Treatment:

Flucloxacillin + Topical antibacterial agents:-  
Silver sulphadiazine (Flamazine)  
↳ ↓ 2<sup>nd</sup> infection

[5]



## 8-DD: TEN

<u>Cause</u> : Drug-induced	Toxin producing Staph
<u>Age</u> : Adult	Infant + young child
<u>Histology</u> : - Derm-epidermal separation - Dermis: Dense inflammatory infiltrate	- Granular layer split in <u>Epidermis</u> - <u>Dermis</u> : lack inflammatory infiltrate
<u>Distribution of Rash</u> : Area of sparing present	Generalized
<u>Mucous membrane</u> involved	Uninvolved
<u>Healing</u> : >14 Days & Scar	Within 7-14 Days
<u>Nikolsky's sign</u> : - In some area - Difficult to elicit	Present in uninvolved skin
<u>Face</u> : lip + M.M Redness + edema	- perioral Crusting - fissuring & mild facial edema + erosion
<u>Treatment</u> : - Standard Burn - IVIG - Corticosteroids	Antibiotics (C-lactamase Resistant) + Supportive Care
<u>Prognosis</u> Bad	good

## SSSS

## 9. Diagnosis For D.D :

• If Rapid differentiation is needed → Tzanck Smear

→ Fixed in 95% methyl alcohol <sup>from denuded Base</sup> → For 1 minute  
→ Then stained in Giemsa stain → For 5 minutes  
→ in SSSS:

→ elongated epithelial cells & small nuclei of upper Epidermis  
→ No inflammatory cells

→ in TEN:

→ Cuboidal cells with large nuclei of Lower Epidermis  
→ inflammatory cells

## Desmoglein as target in autoimmunity and infection

→ Dsg-1 is Cadherin Type cell-cell adhesion molecule in Desmosomes

→ Targeted in 2 Different skin Diseases:

→ Pemphigus foliaceus  
→ SSSS

• in PF: IgG autoantibodies → Develop against Desmoglein-1  
→ inhibit its adhesive function → Blister formation

• in SSSS: exfoliative Toxin produced by staph → Bind and cleaves Dsg 1 → Blister formation



## ⊙ Erysipeloid ⊙

- Organism: Erysipelothrix rhusiopathiae
- gram +ve Non-motile Bacilli

Etiology: Acute Cutaneous inf.  
Caused By: Traumatic inoculation of organism into skin  
 - fishermen or persons who prepare meat, poultry - fish

Site: - Finger webs  
 - Spacing Terminal phalanges

Clinical: 2 Forms:

- ① Localized: Erythematous to violaceous area of nonsuppurative Cellulitis - pruritic, painful  
 - Const. symptoms → Unusual
- ② Generalized: Fever, arthralgia, widespread Cut. lesion

Complications: Septic arthritis  
 Endocarditis, Cerebral + Visceral abscess

Treatment: Penicillin → Drug of choice  
 Erythromycin, Cephalosporins  
 Tetracycline

## ⊙ Erysipelas ⊙

Group A Streptococci

- Infection of Dermis and upper Subcutaneous Tissue
- Organism Reaches the Dermis through wounds or abrasions
- It is a superficial (Dermal) form of Cut. Cellulitis

Leg - Face

- High Fever + Rigors
- well demarcated Erythematous Hot tender Swelling of skin
- Surface: Vesicles, Bullae

- Recurrent → lymphedema
- S.C abscess
- Septicemia - Nephritis

1. systemic antibiotics: Penicillin Benzyl 600-1200mg / IV / 6 hrs
2. Erythromycin
3. Rest - analgesics - NSAIDs → mask the sign of deeper necrotizing infections → **Avoided**

## ⊙ Cellulitis ⊙

- Group A strept
- Staph. aureus
- H influenza → Facial Cellulitis in young

- Acute, Subacute, chronic Inflammation of S.C Tissue

Leg - Face.

- Ill defined area → Erythema
- Swelling - Tenderness & Fever Chills



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- Swelling - Tenderness & Fever Chills



## ⊙ pseudo - Cellulitis ⊙

### ④ Causes:

1. Infection + Bites:
  - arthropod Bite
  - Erythema migrans
  - Herpes zoster

### 2. Neutrophilic Dermatoses:

- Sweet syndrome
- Panniculitis
- Familial Mediterranean fever

### 3. Drug Reaction:

- Fixed Drug Eruptions
- Vaccine/injection site
- Toxic Erythema of chemo

### 4. Inflammatory Disorders:

- Allergic contact dermatitis
- Wells Syndrome
- Thrombophlebitis
- Inflammatory morphea
- Angioedema
- granuloma annulare

### 5. Metabolic Disorders:

Gout

### 6. Malignancy:

Erysipeloid skin metastases

## ⊙ Streptococcal Intertrigo ⊙

- Longitudinal painful fissure with Red Moist Crusted skin



- Sites: under Breast, groins - Behind ears
- DD: other causes of inguinal lesions

## ⊙ Blistering Distal dactylitis ⊙

- Cause: Unique group A strept Bullous Eruption in children (GAS)

- Tense stable Blisters on Erythematous Base



- Site: over volar tips of toes or fingers

- Treatment: Dicloxacillin or First gener. Cephalosporin

## ⊙ Perianal streptococcal Disease ⊙

- perianal GAS infection -

- in preschool children

- C/P: Circular Band of Erythema around anus ± Painful Defecation, Blood streaked stools

- Throat + perianal Culture

- Tx: Penicillin Erythromycin



# ⊙ Scarlet Fever ⊙

## \* Epidemiology + pathogenesis:

- Age: Between 1-10 years
- Caused By: Erythrogenic toxins  
Type A, B, C → produced by  
GAS group A strept
- leads to: Delayed-Type  
Hypersensitivity Reaction
- pathogenesis:  
pbn e antibodies against Toxins  
→ are **spared** the Rash  
But still Develop other symptoms  
of infection: sore throat
- By age of 10 yrs → 80% of  
pbn has Develop Antibodies

## \* Treatment:

- Penicillin → 10-14 Days course
- Antibiotic M → 10 Days, after  
onset of & → will prevent Rheumatic fever

## \* Clinical Features:

- Sudden onset → sore throat - chills - High fever  
Headache - anorexia  
malaise - Nausea
- Rash → Begin 12-48 hrs later  
↳ start as Erythema of Neck, chest, axilla  
↳ After 4-6 hrs → the Remainder of Body involved  
↳ Rash is tiny papules on Erythematous Background  
- **Blanches** with pressure
- Visually! it Resembles "Sun Burn e goose pimples"
- Feels like: Sand paper
- Pastia's lines: (linear petechial streaks) axilla  
antecubital  
inguinal
- cheeks: flushed, Circumoral: pallor
- Throat: Red - edematous, L.N: tender, Cervical
- Tongue: white e Red papillae But later → Beefy Red  
"Red strawberry Tongue"
- After 7-10 Days → Desquamation < Hand  
feet
- \* Diagnosis: Antistreptolysin O, antibrinolysin



# ⊙ Toxic Shock Syndrome ⊙

## Staphylococcal

### ● Toxins of Staph

- 1- TSST-1 → superantigen in TSS.
- 2- Exfoliative Toxin (ETA-ET-B)
  - ↳ protease activity
  - ↳ split epidermal Desmoglein 1 ↳ in SSSS
- 3- Panton-Valentine Leukocidin in MRSA

### ● Clinical :

- Fever • Hypotension • Rash (widespread Macular Erythema)
- affecting mucous membrane + Conjunctiva
- followed By: 1-3 wks Desquamation of fingertips OR Generalized

### ● Etiology :

↓  
Menstrual Causes

● TSST-1

- Staph isolated from Vagina of menstruating women

### ● TSST-1 Cause the effect By:

- 1- Direct Toxic effect on organs
- 2- impairing clearance of endogenous endotoxins derived from gut flora
- 3- acting as → Superantigen

- Treatment
  - Remove any site of infection
  - Parental B-Lactamase Resistant Antibiotics
  - Fluid Support

↓  
Non-menstrual

● Enterotoxin B, C

- From - wounds
- Catheter
- Deep abscess
- nasal packing

## Streptococcal

- Toxins: Caused By Strept pyogenes Strains Toxins

### ● Pathogenesis:

- 1- Strept pyogenes strains → M types 1-3 → Release strept pyogenic exotoxins A, B → Superantigen
- 2- Large Complexes consisting of M protein Bound to fibrinogen

	staph	Strept
<u>ptn</u>	Young (15-35) healthy	Young (20-50) healthy
<u>Diffuse macular Erythema</u>	V. Common	less common
<u>Vesicles, Bullae</u>	Rare	Uncommon
<u>Localized extremity pain</u>	Rare	Common
<u>Soft tissue infection</u>	Rare	Common
<u>HypotN</u>	100%	100%
<u>Renal Failure</u>	Common	Common
<u>PFs</u>	1. Surgical packing 2. Surgical meshes 3. abscess 4. Contraceptive sponge 5. Tampones	- lacerations - Bites - Bruises - Varicella
<u>+ve Blood Culture</u>	< 15%	> 50%



## • D.F: Uncommon

- Rapid progressive Disease
- e significant Morbidity + Mortality

## • chch By:

widespread Fascial necrosis  
Sparing underlying Muscle

## • associated e:

- sever systemic Toxicity
- Rapidly Fatal → unless Recognized quickly and Treated aggressively

## • Fournier gangrene:

- Initially → perineum genitalia
- It's a form of: NF

## • Risk Factors:

- 1- DM
  - 2- I.V Drug abuse
  - 3- Age > 50
  - 4- Hypertension
  - 5- Malnutrition
  - 6- Obesity
  - 7- After lesions
- surgical wounds  
abscess  
Frost Bite  
Open fracture  
Insect Bite

# • Necrotizing Fascitis •

## • Bacteriology:

- Strept. infection
- Staph. H.aphrophilus

## • Types:

- ① Caused By strept pyogenes group A type 1, 3, 12, 28
- ② Other: Result From: Synergistic Infection By facultative anaerobic Bacteria

## • Clinicaly:

- Site: - extremities - Face  
- Trunk - perineum  
- genitalia

- Early: area is Hot - Red  
fender, edematous

- within 2-4 Days:

- area show Bluish Black patch
- irregular ill defined Border
- Hgic Bullae

- at last: involved  
Region → anesthetic D.t  
Damage of local cut. nerves

## • Diagnosis:

- ① Streptococci: From Border of lesion, Blister fluid
- ② Blood culture:
- ③ Histopathology: Frozen section soft tissue Biopsy
  - 1- necrosis of superficial fascia
  - 2- Thrombosis of Blood vessels
  - 3- supuration
  - 4- Deeper fascia: Muscle may, may Not Destroyed
  - 5- sever S.C Fat necrosis
  - 6- supuration 7- vasculitis
  - 8- thrombosis 9- Sequestration

## • Pathogenesis:

- 1- ↓↓ Local Tissue Resistance
- 2- when organism → introduced into subcutis  
→ The Spread Through superficial + Deep Fascia
- 3- Aided By: Bacterial Toxins
  - enzymes → Collagenase, Streptokinase, lipase, Hyaluronidase
  - Local tissue Factors: ↓↓ Blood + oxygen supply
  - interactions among organisms



4 - as the infection spread Deeply :

- ↳ vascular occlusion
- ↳ tissue Ischemia
- ↳ Necrosis

5 - Destruction of superficial nerves :

- ↳ Local skin anaesthesia

6 - liberation of organism + toxins into Blood streams :-

- ↳ profound systemic signs
- ↳ Symptoms of Toxicity

7 - Depressed immunological function :  
(as DM) is a factor

8 - NE Doesn't Develop in AIDs

9 - evolution toward toxic shock :

- By
- ↳ Localized infection
  - ↳ Bacteremia with Toxins
  - ↳ Cytokines produced By

Immune Cells of The Host →  
Rapid irreversible shock

### • treatment :

1 - Early + Massive → Surgical intervention  
- Debridement

2 - I.V High Dose penicillin

3 - Broad Spectrum Antibiotics

4 - extensive supportive measures

# Folliculitis

D.F : Inflammatory Disease of hair follicles  
- Infectious  
- Non infectious

## Types :

### ① Superficial Folliculitis

- 1 - Follicular impetigo of Boeckhart
- 2 - pseudofolliculitis of Beard (Barbe)
- 3 - Acne necrotica (varioidiformis)

### ② Deep Folliculitis :

- 1 - Sycosis (Folliculitis barbare)
- 2 - Folliculitis keloidalis (Acne keloid)
- 3 - Furunculosis (Boils)

### ③ perforating folliculitis

### ④ Eosinophilic Folliculitis

- 1 - Eosinophilic pustular folliculitis
- 2 - " " " of infancy
- 3 - AIDs associated eosinophilic folliculitis

### ⑤ Follicular occlusion triad :

12



# ① → Superficial Folliculitis ←

- Confined to Osthium
- Not always infective in Origin
- D.t - physical, chemicals or adhesive plasters

## 1. Follicular impetigo of Boeckhart:

- D.f: infection of Follicular Osthium & S. aureus
- AGE: Common in children
- Site: Scalp, Limb
- Lesion: Dome-shape pustule at orifice of Hair Follicle
- healing: healing within 7-10 Days
- PF: Topical steroids
- Itt: as impetigo

## 2. pseudo folliculitis of Beard:

- It's D.t: Penetration into skin of sharp tips of shaved Hairs
- Occur e: Curly Hair specially Negros
- Lesion: - Papules, pustules irregularly scattered over Beard area, skin of neck and over the Jaw
- Pathology:
  - ① Sharp Cut end of hair invaginates in Epidermis → Inflammation + microabscess formation

- ② Hair penetrate Epidermis → Heavy mixed inflammatory Cell infiltrate accumulate to ensheath the Hair
- ③ accompanied By abscess formation + F.B giant Cell Reaction at tip of invading Hair
- ④ Naked Hair shafts → surrounded By Acute + chronic inflammation → OR 1ry Fibrotic Dermis

### • treatment:

- ① Shaving:
  - mild case → 1-2 m
  - moderate → 2-3 m
  - Sever → 6-12 m
 Discontinue
  - No Shaving offer all inflammatory lesions have cleared + all "ingrown Hairs" are released

- ② Compresses + Release of ingrowing Hairs:
  - 1- warm tap water
  - 2- Saline compresses 10 minute
  - 3- Daily Remove "ingrowing Hair" & sterile needle

- ③ Topical Corticosteroids: Low potency topical Corticosteroid lotion

- ④ 2ry Bacterial Infections: Systemic antibiotics

- ⑤ Resistant cases:
  - 1- Prednisone (45-60 mg) 7-10 Days
  - 2- Topical efloornithine cream
  - 3- Laser
    - inhibit ornithin decarboxylase enzyme which is critical in proliferation of matrix cells



### 3. Acne necrotica:

- D.F: Chronic follicular Necrotizing process
- D.t:
  - Staph. aureus
  - P. acnes
  - emotional Disturbance
- Clinically: Recurrent small - Red follicular papules + pustules
- site: Scalp margins → undergo Central necrosis
- heal e: small pitted scars after 3-4 wks
- Acne Necrotic miliaris:
  1. milder form
  2. occur through Scalp
  3. without Scar
- DD: papulonecrotic tuberculids
- treatment:
  - Antibiotics
  - TetraCycline

## ② Deep Folliculites

### 1-Sycosis: (Folliculitis barbae)

- D.F: Subacute, chronic, Staphylococcal infection - involving whole Depth of Follicles of Beard + Moustache area
- Sex: only in male after puberty
- Folliculitis Decalvans: Same, But involving Scalp
- Clinically:
  1. edematous - Red follicular papules or pustules
  2. Centered on Hair
  3. Remain Discrete over Beard or upper lip
  4. May Coalesce to produce raised plaques studded with pustules
  5. in Lupoid Sycosis:
    - Follicles Destroyed By scarring & pustules fringe the advancing margin around a pink atrophic scar
- Forms:
  1. Lupoid Sycosis
    - Scarring Deep Folliculitis - affecting the Beard area
    - peripheral extension of perifollicular papules + pustules
    - Central atrophic scarring
    - Cicatricial Alopecia
    - Granulomatous inflammation



## 2 - Mycosis Sycosis :-

- \* Dermatophyte folliculitis of Beard area
- \* inflammatory perifollicular papules + pustules → Coalesce → Nodules + plaques
- \* e Purulent Discharge
- \* Crusting + Loose Hairs → Painlessly Removed

## 3 - Herpetic Sycosis :-

- \* in men e History of Recurrent Localized Facial Herpes simplex who shave e Blader razor
- \* widespread or Unusual presentation of herpes simplex folliculitis seen in HIV + ve

## 4 - Folliculitis decalvans :-

- mainly → men
- lesion → Scattered Atrophied Bald area e follicular pustules
- at margin of scalp and other Hairy area of Body

## 2 - Folliculitis Keloidalis (Acne Keloids)

- D-F : Chronic folliculitis of the nape of neck
- lesions : Hypertrophic Scarring papules + plaques
- Occur in : male after puberty
- initiated By : Pseudo folliculitis (D + ingrowing Hair) OR Collar friction
- Histopathology [Folliculitis barbae, decalvans, Keloidalis]
  - Early perifollicular infiltrate of Neutrophils
  - in old lesions :
    - Chronic granulation tissue
    - numerous plasma cells
    - fibroblasts
    - F.B giant cells

### Treatment :

- 1 - non inflamed plaques + papules → Mixture of Tretinoin gel + potent Corticosteroid gel
- 2 - Inflamed e pustules → 1 - Bacterial Culture → approp Antibiotic + Course of Oral Isotretinoin
- 3 - Small papules →
  - 1 - punch excision to Below level of Hair follicles
  - 2 - close ly or heal secondarily
  - 3 - Laser Hair Removal
  - 4 - permanent Hair Reduction



4- plaques < 1.5 cm → excise and close  
in vertical? Primarily

5- large plaques and  
nodules →

- 1- excise in Horizontal ellipse
- 2- Extend excision Below posterior Hairline, fascia + Deep S.C tissue
- 3- Don't inject corticosteroid to postoperative site
- 4- laser excision, Cryosurgery

6- Maintenance:

1. Tretinoin - Corticosteroid gel mix
- 2- Intermittent intralesional Corticosteroids
- 3- Oral - Topical Antibiotics

7- In pt with Recurrent staph folliculitis and their close contacts:-

- \* application of mupirocin 2% oint twice Daily 5-10 Days to eradicate nasal carriage of staph

8- to Deolonize the skin <sup>axilla</sup> <sup>groin</sup> <sup>submamary</sup>

- topical mupirocin
- wash in chlorhexidine + Dilute Sodium hypochlorite Bath

2- [14]

## 3-Frunculosis (Boils)

• D.F: Staph infection, similar to But Deeper than Folliculitis → invade the Deep parts of Hair follicles

• Age: all ages But Most in young men

• Site: Neck + Buttocks

• Predisposing F:  
1- Low Body Resistance <sup>DM</sup> <sup>Anemia</sup> <sup>HW</sup>  
2- Itchy skin Disease:-  
3- Alcoholism, Obesity <sup>Scabies, Sweet Rash</sup>

• Clinically:

\* Boils Begin as → small inflammatory Nodules → extend and penetrate Deeper

\* purulent + Necrotic Center after few Days

\* more few Days → Boil Rupture + pus Discharge

\* pus Spread → More Boil to Develop

\* Associated:- 1- Fever  
2- Headache 3- loss appetite

\* Several closely grouped Boils → Combine → Carbuncle (mostly in DM)

\* Large Swelling - Spread Deep → up to Bone

• treatment:- Impetigo - Systemic Antibiotics → necessary  
- Surgical incision in some cases.



### ③ Perforating Folliculitis -

• D.F: Asymptomatic follicular papules

• Site: limbs • Age: Young adults

• associated e: 1- Renal Disease  
2- Diabetes acquired  
Perforating Dermatoses

• Histopathology:

→ Dilated follicles plugged e Keratin and follicular epithelium  
- showing → one or more perforations into Dermis

### ④ Eosinophilic Folliculitis :-

#### 1- Eosinophilic pustular Foll :

→ male 5:1

→ seen in: AIDS phs

→ lesion: chronic grouped follicular papules and pustules (Sterile)  
• pruritic

2- [15] -

→ Site: Face, trunk, upper outer arms

→ lesion extend peripherally e Central clearing

→ OR annular lesions

→ Healing: with slight pigmentation

→ mild eosinophilia

→ Histopathology:

• Follicles is heavily infiltrated e eosinophils necrosis

• Degenerations e outer Root Sheath

→ ttt:

1- Dapsone

2- Systemic or topical steroids

3- NSAIDs

4- UVB

#### 2- Eosinophilic pustular Folliculitis in infancy:

• D.F: Self-limiting Disorder → appear During <sup>Early</sup> Infancy

• Lesion: - Multiple - pruritic - follicular pustules  
- Vesico-pustules on Erythematous Base  
- Dry Crusting → common

• site: Scalp + Brow Region

• Cyclical course for period of 3 months upto 5 years

• Treatment: Topical Corticosteroids + oral Antihistamine



## Less common forms of folliculitis (DD of superficial folliculitis)

Type	CP (erythematous follicular papules & pustules)	Therapy
<b>Irritant folliculitis</b>		
<ul style="list-style-type: none"> <li>Topicals (e.g. tar), ointments</li> <li>Application opposite hair growth</li> </ul>	<ul style="list-style-type: none"> <li>Sites of application</li> <li>Esp. terminal hairs</li> </ul>	<ul style="list-style-type: none"> <li>Discontinue inciting topical agent</li> <li>Mid-potency topical steroid (hair growth direction)</li> </ul>
<b>Gram negative folliculitis</b>		
<ul style="list-style-type: none"> <li><i>Klebsiella</i>, <i>Enterobacter</i> &amp; <i>Proteus</i> spp. in acne vulgaris receiving long-term antibiotic therapy</li> </ul>	<ul style="list-style-type: none"> <li>Perinasal distribution</li> </ul>	<ul style="list-style-type: none"> <li>Topical: gentamycin, benzoyl peroxide</li> <li>Systemic quinolones (e.g. ciprofloxacin)</li> <li>Severe: isotretinoin 1 mg/kg/day 16 wks</li> </ul>
<ul style="list-style-type: none"> <li>Hot tub folliculitis</li> <li><i>Pseudomonas aeruginosa</i> within 12-48 hrs of using hot tub / whirlpool</li> </ul>	<ul style="list-style-type: none"> <li>Perifollicular</li> <li>Edematous</li> <li>On the trunk</li> <li>Self-limited</li> </ul>	<ul style="list-style-type: none"> <li>Antibacterial soap</li> <li>Severe immunocompromised: Ciprofloxacin</li> <li>Swimming pool must be chlorinated (0.4-1.0 ppm, pH 7.2-7.4) &amp; changed every 6-8 wks</li> </ul>
<b>Fungal causes</b>		
<b>Dermatophyte folliculitis</b>		
<ul style="list-style-type: none"> <li>Tinea barbae due to <i>T. mentagrophytes</i> or <i>T. verrucosum</i> in male farm workers</li> </ul>	<ul style="list-style-type: none"> <li>Beard &gt; mustache</li> <li>Crusting</li> <li>Loose hairs removed without pain</li> </ul>	<ul style="list-style-type: none"> <li>Topical antifungals (may be ineffective)</li> </ul>
<ul style="list-style-type: none"> <li>Majocchi's granuloma: due to <i>T. rubrum</i> in women who shave their legs</li> </ul>	<ul style="list-style-type: none"> <li>Perifollicular papules or nodules</li> <li>Lower legs</li> </ul>	<ul style="list-style-type: none"> <li>Micronized or ultramicronized griseofulvin, 500-1000 mg/day or 500-700 mg/day po, respectively, for 4-6 wks</li> <li>Terbinafine, 250 mg/day po for 2-3 wks</li> <li>Itraconazole, 200 mg po bid for 1 wk per month, for 2 pulses</li> </ul>
<b>Pityrosporum folliculitis</b>		
<ul style="list-style-type: none"> <li>Young adults</li> <li>Aggravating factors: <ul style="list-style-type: none"> <li>Warm weather, occlusion</li> <li>Excessive sebum production</li> <li>Antibiotic therapy (esp. tetracyclines, immunosuppression)</li> <li>Iatrogenic</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Back, chest &amp; shoulders</li> <li>A KOH preparation reveals abundant yeast forms</li> </ul>	<ul style="list-style-type: none"> <li>Topical: antifungals, selenium sulfide shampoo, 50% propylene glycol in water</li> <li>Systemic: fluconazole 100-200 mg/day for 3 wks; itraconazole 200 mg/day for 1-3 wks</li> </ul>
<b>Candida folliculitis</b>		
<ul style="list-style-type: none"> <li>Primarily in diabetics</li> </ul>	<ul style="list-style-type: none"> <li>Pruritic satellite pustules surrounding areas of intertriginous candidiasis</li> <li>Facial lesions: mimic tinea barbae</li> </ul>	<ul style="list-style-type: none"> <li>Prevent skin-to-skin contact in intertriginous areas</li> <li>Discontinue antibiotics &amp;/or CS therapy</li> <li>Mild-to-moderate: topical antifungals</li> <li>Severe disease: fluconazole 100 mg qd for 1 wk then qod for 1 month</li> </ul>
<b>Herpes simplex folliculitis</b>		
<ul style="list-style-type: none"> <li>Herpetic sycosis is usually seen in men with a history of recurrent localized facial herpes simplex infection who shave with a blade razor</li> </ul>	<ul style="list-style-type: none"> <li>+ vesicles</li> <li>Grouped</li> <li>On erythematous base</li> <li>In the beard area</li> <li>Tzanck smear or biopsy reveals multinucleated giant cells</li> </ul>	<ul style="list-style-type: none"> <li>Acyclovir 200 mg po 5 times per day for 5-10 days</li> <li>Famciclovir 500 mg po tid for 5-10 days</li> <li>Valacyclovir 500 mg po tid for 5-10 days</li> </ul>
<b>Demodex folliculitis</b>		
<ul style="list-style-type: none"> <li>May be associated with immune suppression</li> </ul>	<ul style="list-style-type: none"> <li>On the face</li> <li>Background of diffuse erythema</li> <li>Skin scrapings reveal numerous Demodex mites</li> </ul>	<ul style="list-style-type: none"> <li>Topical: 5% permethrin cream</li> <li>Systemic: single dose of ivermectin 200 µg po</li> </ul>
<b>Drug-induced folliculitis (acneiform eruption)</b>		
<ul style="list-style-type: none"> <li>Most common in acne-prone patients &amp; age groups</li> <li>Corticosteroids, androgenic hormones, iodides, bromides, lithium, isoniazid &amp; anticonvulsants</li> <li>Within 2 weeks of starting the offending agent</li> </ul>	<ul style="list-style-type: none"> <li>Monomorphic</li> <li>Trunk, shoulders &amp; upper arms</li> <li>Rare comedones</li> </ul>	<ul style="list-style-type: none"> <li>Discontinue the offending drug, if possible</li> <li>Topical: benzoyl peroxide, clindamycin, erythromycin, retinoids</li> <li>Systemic: tetracycline, doxycycline, minocycline</li> </ul>
<b>Actinic folliculitis</b>		
	<ul style="list-style-type: none"> <li>On the upper trunk &amp; arms several hours after sun exposure</li> <li>Spare the face</li> <li>Not pruritic</li> </ul>	<ul style="list-style-type: none"> <li>Sun avoidance; sunscreens will not prevent lesion formation</li> <li>Topical mid-potency corticosteroids</li> <li>Isotretinoin 0.35-0.5 mg/kg/day for 3-6 months</li> </ul>



### 3- AIDs associated:

- Lesion: pruritic follicular papules
- Site: Face-Scalp-upper trunk
- in HIV plus or immunosuppressed
  - ↳  $CD4 < 300 \text{ cells/mm}^3$
- Clinical improvement:
  - ↳ elevation of  $CD4$  & antiretroviral therapy

4. lesion: known as Acne inversa
- chronic - Recurrent inflammatory Disease, presenting as:-
    - Painful subcutaneous Nodules
  - Chrch By: - Double comedones
    - Deep sinus tracts - Abscess

5 - new # as:  
TNF- $\alpha$  inhibitors

6. Hormones:  
- most plus  $\hat{e}$  Normal androgen profile

### ⑤ Follicular Occlusion triad:

1- D.f: Chronic - Recurrent - Deep seated Folliculitis  
 $\hat{e}$  abscess and sinus formation  $\rightarrow$  Scarring

2. Triad of: tetrad = + pilonidal sinus

- \* - Hidradenitis Suppurativa:  $\left\{ \begin{array}{l} \text{axilla} \\ \text{anogenital} \end{array} \right.$  ♀ more
- \* - Acne Conglobata  $\leftarrow \begin{array}{l} \text{Back} \\ \text{chest} \end{array}$
- \* - Perifolliculitis (epithis abscedens et suffodiens (Dissecting Cellulitis of Scalp) - Scalp

3- pathogenesis:  
- only ♀

#### ① Follicular Occlusions:

- Retention of follicular products (initiating event) in all 3 diseases

#### ② 1ry Bacterial infections:

- infection of the follicles  $\hat{e}$  S. aureus
- Anaerobic strept + Bacteroides spp
- Culture -ve

#### ③ Hormonal effects:

- occur after puberty
- improvement  $\hat{e}$  pregnancy
- exacerbation premenstrual + Oral contraceptive

#### ④ Immune defect:

- $\downarrow$  T. lymphocytes

#### ⑤ Antigen - Antibody Reaction



# → Hidradenitis Suppurativa (Apocrinitis) ←

## 1- Dermographics:

- Begin in 2nd & 3rd decades
- Female >
- perianal HS male >

## 2- Clinical:

- Tender S.C nodules → Rupture → painful - Deep Dermal abscess
- Don't exhibit pointing
- extrude → purulent foul smelling Discharge
- Fibrosis • Dermal Contracture
- Induration of skin
- Typically: presence of Double Comedones

## 3- Staging: Hurley staging system

- I → Abscess formation (single-multiple) without sinus tracts + Cicatrizations
- II → One or more widely separated Recurrent abscess with Tract formation + scars
- III → Multiple interconnected tracts + Abscesses throughout an entire area

## 4- Etiopathogenesis:

- 1- Autosomal Dominance
- 2- Caused By: Follicular occlusions
- 3- Bacteria → Secondary Colonizers → exacerbate HS
- 4- Underlying immunologic aberrations:
  - Defect in inflammatory mediators + Receptors to apoptosis
  - Enhanced expression of **TLR2** within macrophages + Dendritic cells
- 5- Mechanical irritation Before onset of Disease
- 6- Smoking + Obesity → Strongly associated to the Disease and may exacerbate it
- 7- Over production of Cytokines associated to innate immunity (IL-1B, TNF-α)
- 8- Expression of Cytokines → modulate adaptive immune system



## 5 - Associations:

### Common

- Acne Conglobata
- Acne Vulgaris
- Crohn's Disease
- Dissecting Cellulitis of scalp
- Obesity
- Pilonidal Disease
- Smoking

### Rare

- Acanthosis Nigricans
- Dowling-Degos Disease
- Fox-Fordyce disease
- Interstitial Keratitis
- KID syndrome
- pachyonychia Congenita
- PAPA Syndrome
- Pyoderma gangrenosum
- SAPHO Syndrome

## 6 - Complications:

- 1- Anal - Urethral - Rectal Strictures + Fistula
- 2- Anemia
- 3- Contracture + limb mobility limitation
- 4- Cut. SCC
- 5- Lumbosacral epidural abscess
- 6- Sacral Bacterial Osteomyelitis

## 7 - treatment:

- \* General:**
- 1- avoid tight fitting clothing
  - 2- non-narcotic analgesics
  - 3- Reassurance
  - 4- Smoking Cessation
  - 5- Stress Mgmt
  - 6- Weight Loss

### **\* Antibiotics:**

- 1- Clindamycin 1% solution Topical twice daily / 12 wks
- 2- Tetracycline 500 mg twice daily / 3 months
- 3- Combination Oral Clindamycin + Rifampicin
- 4- Minocycline

**\* Dapsone:** Daily Dose 25 to 150 mg

**\* Retinoids:** Isotretinoin 0.5 mg/kg/day / 6 m

**\* Hormones:** Anti-Androgens

**\* Immunosuppressive + anti-inflammatory Agents:**

- 1- prednisone 5 mg every other Day
- 2- Tacrolimus 1 mg Daily
- 3- Mycophenolate mofetil 500 mg / twice Daily
- 4- Cyclosporine / Azathioprine - Methotrexate

**\* TNF- $\alpha$  inhibitors:** (Infliximab - Etanercept)

**\* Neurotoxins:** Botulinum toxin  $\downarrow$  apocrine gland secretion

**\* Physical:** Radiotherapy, light, Cryosurgery, CO<sub>2</sub> laser

**\* Surgery:** جراحه



- Surgery according to Hurley stage:

Stage	Topical	Systemic	Surgery
1- 1st line	- Clindamycin - Intralesional triam- cinolone - Resorcinol	- Antibiotic - Hormonal therapy	Localized surgery
2- 2nd line		- Antibiotic: tetracycline OR Clindamycin + Rifampicin	- Cold steel excisions - CO <sub>2</sub> laser evaporation
3- 3rd line		- Systemic Immunosuppressant - Dapsone - Cyclosporine - TNF- $\alpha$ inhibitor	- Wide excision - CO <sub>2</sub> laser evaporation

## Anthrax malignant pustule

- D.f: Acute Disease in humans and animals
- Caused By: Bacillus anthracis (Gram +ve Spore forming rods)
- Forms: 1- Cutaneous  
2- Pulmonary  
3- GIT
- Cutaneous Form:
  - malignant pustules at inoculation site  $\rightarrow$  Spreads  $\rightarrow$  Become Hgic
  - Central eschar & surrounding non-pitting edema
  - Eschars  $\rightarrow$  Sloughs  $\rightarrow$  Shallow Ulceration
- Virulence Factors:
  - Capsule + 2 exotoxins: edema toxin, lethal toxin
- Bioterrorism - associated ttt:
  - Ciprofloxacin
  - Doxycycline
  - Penicillin (conventional ttt)



# SKIN Diseases Related to Coryneform Bacteria

## 1-Erythrasma:

- D.F: chronic localized superficial infection
- Caused By: *Corynebacterium minutissimum*
- Lesion: - Sharply - defined  
- Irregular Brown  
- Scaly patches
- Site: Groin, axillae, toe clefts  
extensive area of Trunk, Limbs
- Co exist of: Obesity - DM
- Wood's Light • Coral-Red Fluorescence  
D.f Coproporphyrin III
  - Pink Fluorescence in  
- necrotic tumors  
- normal tongue
  - follicular opening of normal skin of face and upper trunk
  - Acanthosis nigricans in axilla
- Variants:
  - 1- Generalized "Disciform" outside the classic intertriginous sites
    - The presenting manifest of DM II
  - 2- Interdigital: chronic masseration + fissure (most common form)

- Treatment: 1- Topical • Azole antifungal agents  
2 weeks  
• Fucidin, clindamycin, Erythro
- 2- Oral: Erythromycin → 5 Days

## 2-Trichomycosis axillaris : Trichomycosis nodosa

- D.f: Superficial infection of axilla, pubic hair etc
- lesion Formation of adherent granular nodules on hair shaft
- axillary sweat: colored together e clothing  
yellow  
Black  
Red
- its Duets: Different Types of Aerobic Corynebacteria  
grow within and Between Cuticular cells + Cortex
- Itt: - Shave axillary Hair, topical Benzoyl peroxide  
- Topical Clindamycin  
- antiperspirants

## 3-Pitted Keratolysis:

- D.f → Superficial infection produce Keratin. degrading proteases → superficial erosions in st. Corneum on the soles
- Hyper Hidrosis
- Itt → Fucidin - Erythromycin - Clindamycin



## 4. Cut. Diphtheria:

- D.F.: Localized infection - Endemic in tropical countries
- Caused By: *C. diphtheriae*  
Skin involvement via inoculation wound
- Lesion: Sharply Bordered -  
Punched out Ulcer & yellow leathery Pseudomembrane (1ry Disease)  
- pre-existing wound became infected (2ry)
- Treatment:  
- Diphtheria Antitoxin From horse serum  
- Crucial > PCN, Erythromycin

## Pseudomonas infection

- Bacteria: gram -ve Bacteria  
grows well in aqueous environment
- Pigments produced: 1. Greenish-Blue pyocyanin  
2. Yellow green fluorescein  
3. Brown-Black pyomelanin

### Clinical infections caused by Pseudomonas:

- ① In infancy:
  - periumbilical
  - Foul-smelling
  - Greenish-Discharge
  - Spreading Erythema
- ② Gram -ve Folliculitis:
- ③ Peri-onychial pustules: & greenish discoloration of Nails
- ④ 2ry infection of wounds and Burns:
  - Fever
  - Shock
- ⑤ Swimming pool Rash:  
(*P. aeruginosa* - Hot tub folliculitis)  
lesion → Erythematous follicular papules + pustules  
at site of exposure to water  
Sparing → Face-neck  
its self limiting → In immunocompetent person
- ⑥ Green Nail Syndrome: Onycholysis of distal portion  
& greenish discoloration of Nail



### ⑦ Gram -ve toe-web infection:

- sharply Demarcated Maceration
- tinged green & green fluorescence
- May Begin & Dermatophytic inf and Pseudomonas is 2ry invader

### ⑧ External ear infection: Otitis

- Malignant Otitis externa seen in elderly Diabetic ptn + immunodeficiencies
- Manifestations:
  - Severe Pain - persist drainage
  - Granulation Tissue formation at the Junction of Osseous and Cartilaginous portion of auditory canal
- Association:
  - Local lymphadenopathy
  - Parotid gland swelling
- Deeper invasion cause:
  - Osteomyelitis of Skull • nerve palsies
  - mastoiditis • Sepsis • sigmoid Sinus Thrombosis
- HA: 1. Antibiotics, surgery

### ⑨ Ecthyma gangrenosum:

- D.F: Severe invasive infection By *P. aeruginosa* + typically occur in immunosuppressed ptns
- lesion: Erythematous macules → opalescent, tense vesicles OR pustules → Hemorrhagic + violaceous vesicles → Rupture → Ulcers & Necrotic Center

### ⑩ Septicaemia:

### ⑪ Blastomycosis-like pyoderma:

- lesion: Verrucous plaques & elevated Borders + pustules as Chronic vegetating infection

### → treatment:

1. 1% Acetic acid Compresses - Silver Sulphadiazine
2. IV. gentamycin - Cephalodin Cream in Localized cases  
In Septicemia

## Acute Meningococemia

- D.F: Acute - potentially life threatening infection of Blood vessels - Caused By: Neisseria meningitidis
- Bacterial Carriage via: Nasopharynx
- lesion: Erythematous Macules - papules → evolves to Stellate Purpuric patches, plaques & ischemic Necrosis



- and Hg e
- accompanied By { High Fever  
Toxic appearance

### ← Recurrent inf:

in ptn e defect in late components of Complement (C5 - C9)

### ← treatment:

- High Dose IV Penicillin
- if Resistant → 3rd gen. Cephalosporin

## ⊗ Bartonella infection ⊗

- Bacteria: Gram -ve, facultative intracellular Bacteria
- Can infect: healthy individuals
- Transmitted via: Insect Vectors (ticks - fleas - sandflies - mosquitoes)
- Adhere to + invades Erythrocytes
- 3 Types → all can produce an Endothelial Cell-Stimulating Factor  
→ Cause proliferation of → endothelial cells  
→ Blood vessels



Disease	Etiology/vector	Clinical findings	Treatment
Oroya fever (Carrion's disease) (Verruga peruana) (Peruvian wart)	<i>Bartonella bacilliformis</i> Vector: sandfly <i>Lutzomyia verrucarum</i>	Biphasic disease Acute stage (Oroya fever): fever + hemolytic anemia Chronic stage (verruca peruana): erythematous papules / nodules, resolves spontaneously but may persist for years	Acute stage: chloramphenicol (covers salmonella coinfection) Chronic stage: TCN or PCN
Cat scratch disease	<i>Bartonella henselae</i> Vector: cat flea <i>Ctenocephalides felis</i> Transmission via cat bite or scratch (flea feces inoculated into scratch site)	Unilateral tender lymphadenitis 2-4 weeks after cat scratch, typically in axilla > epitrochlear node (can last between 2 & 5 months) Perinodal oculo-glandular syndrome: unilateral conjunctivitis & regional lymphadenitis	Spontaneous resolution typical If patient immunosuppressed, treat with doxycycline or erythromycin
Bacillary angiomatosis	<i>Bartonella henselae</i> , <i>Bartonella Quintana</i> Vector: lice, ticks, fleas	Erythematous tender papules & nodules resembling pyogenic granulomas, seen mainly in HIV patients	Doxycycline or erythromycin
Trench fever (Shinbone fever)	<i>Bartonella Quintana</i> Vector: body louse <i>Pediculus humanus var. corporis</i>	Fever (relapsing), chills, tenderness of shins, back pain, & transient macular eruption] ↑ Risk: crowding & poor hygiene	Doxycycline or erythromycin



Disease	Etiology/vector	Clinical findings	Treatment
Glanders	<i>Burkholderia mallei</i> Contact with infected horses	Ulcerated nodule at inoculation site with regional lymphadenopathy, $\pm$ "farcy buds" (nodules along lymph nodes)	Sulfonamide
Brucellosis (Undulant fever) (Malta fever)	<i>Brucella spp.</i> Direct contact with infected animal or ingestion of dairy (unpasteurized) infected meat	Cyclic fevers, arthralgias, hepatosplenomegaly; rare skin involvement (violaceous papulonodular eruption) $\uparrow$ Risk: butchers, farmers, veterinarians	Doxycycline combined with rifampin
Tularemia (Rabbit fever) (Deer fly fever)	<i>Francisella tularensis</i> Direct contact with wild animals like rabbits (rabbit-borne), ticks (tick-borne) or deer flies	Ulceroglandular: tender chancre-like papule or nodule with lymphadenopathy, lymph nodes may become fluctuant with suppuration $\uparrow$ Risk in hunters	Streptomycin
Vibrio infection	<i>Vibrio vulnificus</i> Ingestion of raw seafood or open wound exposed to seawater	Fever, chills, abdominal pain, red to violaceous macules $\rightarrow$ painful hemorrhagic bullae with cellulitis $\uparrow$ Risk: diabetes, liver disease, immunosuppression	Oral tetracyclines
Plague	<i>Yersinia pestis</i> Transmitted via flea bite from infected animals	Myalgias, malaise, fever $\rightarrow$ small papule / pustule at site of flea bite with swollen, painful fluctuant lymph nodes ("buboes")	Streptomycin (IM)
Malakoplakia	<i>E. coli</i> ( $\pm$ <i>Pseudomonas aeruginosa</i> , <i>Proteus</i> , <i>Klebsiella</i> )	Commonly affects urinary tract, rare skin involvement with weeping perianal plaque or polypoid mass Histo: Michaelis-Gutmann bodies	Cipro (long-term) or surgical removal
Rhinoscleroma (Fig. 26)	<i>Klebsiella rhinoscleromatis</i> Transmission via inhalation of droplets or contaminated material	Infectious granulomas in nasal mucosa & respiratory tract, epistaxis, Hebra nose (destruction of nasal cartilage) Histo: Mikulicz cell, Russell bodies	Cipro
Rat-bite fever (Haverhill fever)	<i>Streptobacillus moniliformis</i> Direct contact from rodents or contaminated food	Fever, arthritis, $\pm$ ulceration at site of bite & generalized morbilliform eruption with acral distribution	Penicillin
Cat bite	<i>Pasteurella multocida</i>	Erythema, pain, tenderness with gray serous drainage from puncture wound	Augmentin, irrigate site, $\pm$ tetanus prophylaxis
Dog bite	<i>Capnocytophaga canimorsus</i> <i>Pasteurella multocida</i>		
Human bite	<i>Eikenella corrodens</i>		



## Blastomycosis-like pyoderma

→ D.f: pyoderma Vegetans - pyodermitis Vegetans of Hallopeau.

### → 2 Different Diseases:

1. pemphigus vegetans of Hallopeau
2. Vegetating Tissue Reaction try to Bact. infection

### → lesion:

- multiple, large, verrucous - vegetating plaques
- Scattered pustules + elevated borders
- Resembling Blastomycosis

→ site: Face - Leg - Intertriginous area

### → association with:

- o Ulcerative Colitis, lymphoma
- Alcoholism - try Immundeficiency

### → Histopathology:

- Pseudo Carcinomatous Hyperplasia
- multiple Abscess in the Dermis
- Hyperplastic Epidermis

### → Histogenesis:

- D. Staph. aureus
- Deficiency in Cellular immunity
- Chemotactic activity of Neutrophils

## Spirochaetes

- Organism: Long - flexible - spiral - motile  
- Some Species are pathogenic:

Treponema → Syphilis - Yaws - Bejel, pinta

Leptospira → Weil's Disease

Borrelia → Respiratory Fever - Lyme Disease

↳ Borrelia is an etiologic agents for several Diseases:

#### Direct etiology

- Lyme Disease
- Acrodermatitis Chronica Atrophicans
- Lymphadenitis Benigna Cutis

#### Possible etiology

- Erythema chronicum migrans
- Some Morphea
- lichen sclerosus et atrophicus
- lymphocytic infiltrate of Jessner
- Parry-Romberg
- Shulman Syndrome (eosinophilic fasciitis)



# Lyme Disease

- D.F: Caused By *Borrelia burgdorferi*  
Transmitted to Man By Hard Tick Bites

- ch ch: Erythema Chronicum migrans  
(ECM) ← early manifestation  
at site of Bite

Dissemination of infection →  
affect CNS - Heart, Joints

## - Etiology:

- Vector of *Borrelia* → Ixodes tick
- 50% of ptn Recall a tick Bite
- The Autumn and winter feeding  
Adults tick → more noticed than  
Bite By summer feeding nymph  
(painless + goes unnoticed)
- All stages of ticks are Capable  
of transmitting the Disease
- Nymph stage: is the most common  
Vector

- ptn live or visit Woodland areas
- as small mammals → are necessary Hosts  
for immature stages in life cycle of tick

## - Pathogenesis:

- the most effective transmission → 48-72 hr after  
the onset of tick attachment
- *Borrelia* transferred During → tick Removal from  
the skin Because of Direct pressure exerted on midgut
- Inside the gut → The organism expresses surface  
of tick lipoproteins *OspA* + *B*  
function as adhesion molecules to colonize the tick  
midgut
- During transmission (*Borrelia* surface lipoproteins  
are altered)  
*OspA* → Down Regulated  
*OspC* → (in salivary gland invasion)  
*DbpA* → (mediated *Borrelia* adhesion to decorin  
associated w/ Host collagen)

25

Up Regulated



## - Clinical Features:

Stage 1	Stage 2	Stage 3
<ul style="list-style-type: none"> <li>- ECM present upto 75%</li> <li>- after 30 Days → appear at site of Bite as:</li> </ul> <p>Erythematous papules ↓ gradually Enlarge to ↓ Annular Configuration è Central clearing</p> <p><u>Histopathology:</u></p> <ul style="list-style-type: none"> <li>- ECM: superficial + Deep perivascular and interstitial lymphohistiocytic infiltrate;</li> <li>Contain plasma cells</li> <li>- Spirochaetes in 40% of cases è warthin-starry stain</li> <li>- Multiple annular lesion</li> </ul> <p>Develop later</p> <ul style="list-style-type: none"> <li>- Whitcara + malar Erythema → occur rarely</li> </ul>	<ul style="list-style-type: none"> <li>- occur Between 2<sup>nd</sup> - 7<sup>th</sup> months</li> <li>- mainly involve nervous system</li> </ul> <p>Neuro: in 15% of pts</p> <ul style="list-style-type: none"> <li>- meningitis - cranial nerve palsies: Facial palsy</li> </ul> <p>Heart: in 10% of pts</p> <ul style="list-style-type: none"> <li>AV Block - Myocarditis</li> </ul> <p>Myalgia - Arthralgia: involve Joints, Muscles near to ECM site</p> <p>Lymphadenosis Benigna Cutis:</p> <ul style="list-style-type: none"> <li>- Next to ECM site (axilla - ear lobe)</li> <li>- Erythematous Granitic Asympt. nodules → grow for some months then → Remain stationary for yrs</li> <li>- finally Disappear</li> </ul> <p><u>Histopathology:</u></p> <ul style="list-style-type: none"> <li>- Dense Dermal infiltrate of lymphocytes and Histocytes in follicular pattern</li> <li>- Appendages + Blood vessels <u>Not</u> involved</li> <li>- Epidermis → Normal</li> </ul>	<ul style="list-style-type: none"> <li>- Develop weeks to years after onset of illness</li> <li>- involve:</li> <li>- Chronic arthritis 60% of untreated cases</li> <li>- Oligoarticular</li> <li>- affect Typically large Joints (knees - wrists)</li> <li>- Symptoms → present During the whole Day</li> <li>But morning Difficulties             <ul style="list-style-type: none"> <li>• S.C nodules</li> <li>• Rheumatoid factor</li> </ul> </li> <li>- ch. ch of Rheumatoid Arthritis → Absent</li> <li>- Neuro: clinical manifestation of stage 2 → Become Chronic</li> </ul> <p><u># of stage 2:</u> Intralesional Topical Steroid or Penicillin</p>



## Clinical evolution of Lyme disease

	Stage 1	Stage 2	Stage 3
<b>Skin</b>	ECM, spreading erythema, multiple annular lesions, urticaria	Lymphadenitis benigna cutis, erythema palmaris	ACA, morphea
<b>Nervous system</b>	Headache, neck stiffness	(15%) meningitis, cranial neuritis, meningoradiculitis	Chronic myelitis, multiple sclerosis-like syndrome
<b>Musculoskeletal</b>	Myalgia, arthralgia	Migrant myoarthralgias	(60%) oligoarticular attacks, ch. arthritis
<b>Other systems</b>	e.g. hoarseness, cough, hepatitis, $\uparrow$ SGOT, microhematuria, proteinuria, testicular edema, conjunctivitis, fever, lymphadenopathy	Myocarditis, atrio-ventricular block, (10%) iritis, panophthalmitis	—



## - Acrodermatitis chronica Atrophicans

• D.f: Late Skin manifestation of **Lyme Disease**

• Age: 30 - 60 yr

• Clinical: Begins as **painless Erythematous Nodules or plaques**

- Site: Mainly **Extremities** → slowly extend to **Trunk** for several months → leaving **Atrophic Scar**

- Skin → Smooth - Hairless - tissue-paper like

- Pseudo Scleroderma → over Dorsa of Feet

- B. burgdorferi antibodies → almost in all cases

### • Histopathology:

- Epidermis → Atrophic & Destruction of Epidermal appendages

- Subepidermal Zone & Degenerated connective tissue present below a Dense Band like infiltrate of lymphocytes & histocytes, plasma cells

27

## • Host Response of Lyme:

- After tick's Bite → B. burgdorferi disseminate Through Hematogenous Route → generalized infection originate

- The **Humoral Response** → Develop Several weeks into → Cause of the Disease

- Can Be Aborted By early tx

- There is Early IgM production (3rd - to - 6th week During ECM Eruption) But less Specific

- Later IgG Production During later Stages (2nd - 3rd stage of Neurois - Arthritis)

- The Early Antibody Response is against: **41KD** flagellar Component (non-specific)

- The Later antibody Response is against: **34 KD** polypeptide

- **CM I** Response is Important in Lyme Disease

↑ **T-Suppressor** Early in ECM later ↓

- in pregnant → miscarriage



## Diagnosis of Lyme

① Spirochaete in tissue OR Culture the organisms

- From tissue, Blood, Joints, fluid, vitreous humor, CSF
- The most specific
- Giemsa stain - Gram -ve
- Warthin-Starry - modified Steiner stain

② Culture -

on Barbour-Stoenner-Kelley (BSK) medium

③ IFA - ELISA:

- using whole Borrelia cells
- e.g. 41KD periplasmic flagellae associated Antigen
- outer most membrane protein

④ Immunoperoxidase slide test OR Hemagglutination

False +ve in: Syphilis, Relapsing fever

## Treatment of Lyme:

- 1 - Antibiotic if started early → effective
- 2 - Pt has No Evidence of Bacterial Dissemination  
(Solitary ECM lesion) - **Amoxycillin** 500-1000 mg 3 times/Day
- 3 - Systemic Disease: - Doxycycline 100 mg 3 times/day 3 weeks  
Ceftriaxone 2 g/daily I.V. → 2 weeks  
Benzyl penicillin 24 MU Daily
- 4 - Prophylactic 1st Following tick bites

## Botryomycosis

- D.F: Chronic granulomatous Reaction to Bacterial inf. usually **Staph aureus** OR **Pseudomonas**
- associated w/ DM - AIDS
- Clinically: • site: limb - face - perianal Region
- Single - multiple abscesses → Contain granules Resembling Sulphur granules of Actinomyces → Break Down → multiple sinuses Discharge serous fluid
- Healing: after many months & atrophic scar
- Histopathology: granules → Contain masses of Bacteria & surrounding Histocytes, plasma cells, lymphocytes, giant cells
- 1st: Flucloxacillin - Erythromycin - Fucidic acid



# ActinomyCosis

→ D.F: Chronic, spreading, Suppurative  
Granulomatous Disease

## → Etiology:

● Actinomyces: Bacteria

Producing Filamentous Branching hyphae

- Anaerobic Actinomyces: Normal mouth inhabitants

So → ActinomyCosis is Acquired Endogenously  
e.g. A. israeli, rare A. bovis

● Poor Dental, Mouth hygiene, Dental extraction

## → Clinical:

### Cervico-facial 57%

- Dull Red indurated Nodule
- cheek, submaxillary
- multiple sinus Discharge Pus "Sulphur granules"
- Extension to Orbit, Bones of skull, Brain

### Thoracic 22%

- Aspiration of Actinomyces from mouth of Diseased lung
- ↓
- cough, hemoptysis, weight loss, Night sweats
- Extension through thoracic wall to Skin → multiple Draining sinuses

### Abdominal 15%

- organism Reach GIT (Appendix - Cecum)
- manifest: Appendicitis
- slow growing mass
- Extension to liver (Jaundice), abd wall (Sinus)

### Int Cutaneous

- (uncommon)
- S.C Nodules on exposed skin
- Sinuses
- L.N ++

### Pelvic

- IUCD
- No skin affection

## → Diagnosis:

① Sulphur granules: - yellow, adherent to webs of gauze dressing  
- when crushed + exam microscopically → narrow  
Bacillary forms, elongated hyphae & Branching

② Culture of A. israeli: - anaerobic incubation at 37°C - 2-4 days  
- OR enriched media (Brain-Heart infusion glucose agar)  
- white, glistening, nodular colonies with irregular margins

③ Histology: - Radiate delicate mycelial filaments  
- Bear club-shape processes (Ray fungus)

## → Tt: Penicillin G - Ampicillin

- 1- Deep seated chronic inf: 2-6 wk tt I.V then 3-12 m oral
- 2- Acute inf: 2-3 wk oral + Incision, Drainage, excision of tracts
- 3- penicillin 10-12 million Unit/Day I.V (12 hr Daily) → 30-45 Day followed by surgical excision of infected tissue then I.M



- D.F: Suppurative infection By  
(Actinomycetoma) ← Bacteria OR  
(Eumycetoma) ← Fungal

- lesion : Painless Nodules at Site of Trauma
  - ↑ in size & purulence, tumefaction
  - Draining sinuses, exudate contain grains

## Of Rickettsiae

30

-D.f: Acute-chronic Suppurative Disease Caused By:  
aerobic Bacteria, Actinomyces Nocardia  
↳ N. asteroides

mycetoma      lymphocutaneous  
No Cordiosis      superficial Cutaneous  
No Cordiosis

- in immunosuppressed → lesion; - widely Disseminated S.C Nodules (Resemble pulmonary T.B)

- III: Cotrimoxazole, Sulphonamides, Ampicillin  
Imipenem

- Surgical Hx → For S.C Abscesses

- Granuloma inguinale
- Gonorrhea
- lymphogranuloma venereum
- Syphilis



تجربات

## 1- Napkin Rash:

- Impetigo
- Candidiasis
- Psoriasis
- Contact Dermatitis
- Acrodermatitis Enteropathica
- Hidradenitis Suppurativa

## 2- Red Face:

- Erysipelas
- Flushing • Rosacea
- Dermatitis (AD-CD-SD)
- Lymphoma
- CTD: LE-DM
- Metabolic: porphyria

## 3- Diseases caused By Cat:

- Cellulitis
- Cat scratch Disease
- T.B
- Scabies • leishmaniasis
- Fungal Dermatitis
- Ulcer

## 4- Inflammatory lesion:

- Intertrigo
- Candidiasis
- Darier Disease
- Hailey-Hailey
- Paget Disease
- Seborrheic Dermatitis

## 5- Interdigital web spaces:

- Intertrigo
- Erythrasma
- Dermatophytosis
- Erythrasma
- Scabies • Blastomycetia
- Soft corn Xanthoma

## 6- Skin Diseases of groin:

- Intertrigo
- Erythrasma
- Candidiasis
- Hailey-Hailey
- Contact Dermatitis
- Mycosis fungoides
- Psoriasis
- Pyoderma
- Seborrheic Dermatitis

## 7- Cicatricial alopecia

- Pseudo Folliculitis Barbae
- Acne keloidalis
- Lipo
- CT: DLE, DM, Morphea
- Tumors: BCC, SCC, metastasis

## 8- Acne form Eruption:

- Pseudo Folliculitis Barbae
- Acne inversa
- Acne keloidalis nuchae
- Acne aesthetica
- Tropical Acne
- Radiation Acne
- Perioral Dermatitis

## 9- Scalp pustules - Crusts - exudation:

- Acne Necrotica
- Acne keloid
- Contact dermatitis
- Keroin

## 10- Role of X-ray in Dermatology:-

- 1- Therapeutic: Favus, Acne keloidalis
- 2- Grenz: TS, NF
- 3- T.B, EN, sarcoidosis

## 11- Axillary Region

- Trichomycosis Axillaris
- Hidradenitis Suppurativa
- Hailey-Hailey Disease
- Fox-Fordyce Disease
- Acanthosis nigricans
- Drug Eruption
- Contact Dermatitis

## 12- Skin Disease of Breast - Nipple:

- Hidradenitis Suppurativa
- Leiomyomas
- Lupus panniculitis
- Morphea - Candidiasis
- Mycosis fungoides

## 13- Cut. Diseases associated with DM:

- Erythrasma
- Pyoderma • pseudomonas
- Deep fungal infection

## 14- Perioral Lesions:

- Acrodermatitis Enteropathica



	Botryomycosis	Actinomycosis
Def	Chronic granulomatous reaction to bacterial infection	Chronic , spreading, suppurative & granulomatous disease
Organism	Staph. aureus , pseudomonas	Actinomycetes Normal mouth inhabitants
PF	- DM - AIDS	- Poor dental & mouth hygiene - Dental extractions
CP	- Limbs, face, perianal  - Single or multiple abscesses, containing granules resembling sulphur granules of actinomycosis , breakdown multiple sinuses discharging serous fluid  - Healing → atrophic scar	1- Cervico-facial: dull red indurated nodules , multiple sinuses → pus & sulphur granules  2- Thoracic: cough, hemoptysis, night sweats, weight loss, multiple sinuses  3- Abdominal: appendicitis, mass, liver (jaundice), sinus tracts. etc  4- Primary cutaneous: sc nodules on exposed skin with sinuses, LN  5- Pelvic: no skin affection
Diagnosis	Culture to identify the organism	- Sulphur granules (yellow, 1-2 mm) → bacillary forms, elongated hyphae  - Culture : anaerobic incubation at 37°C for 2-4 d or enriched media (Brain- heart infusion glucose agar) → white , glistening, nodular colonies with irregular margins
HP	Granules containing masses of bacteria with surrounding reaction of histiocytes, plasma cells, lymphocytes & FB giant cells	Organism form granular colonies , mycelia filaments, bear club-shaped processes (ray fungus), surrounded by chronic granulomatous infiltrate
ttt	- Flucloxacillin or, - Erythromycin or, - Fucidic acid	- Penicillin G or ampicillin (of choice) - Tetracycline, erythromycin, Chloramphenicol



### **Q Bacterial infections:**

- 1- Pathophysiology, grading, PF, diseases associated, DD, ttt of Hidradenitis suppurativa.
- 2- Compare: Botryomycosis & actinomycosis
- 3- Compare: Erysipelas & Erysipeloid
- 4- Compare: cellulitis & Erysipelas
- 5- Lower limb cellulitis: causative organism, pathogenesis, PF, DD, ttt.
- 6- Staphylococcal scaled skin syndrome: etiopathogenesis, CP, management
- 7- Non-specific bacterial infections of the skin.
- 8- Pitted keratolysis.
- 9- Eosinophilic cellulitis.
- 10- Follicular occlusion tetrad.
- 11- Folliculitis.
- 12- CP & management of TEN.
- 13- Management of necrotizing fasciitis.
- 14- Coryneform bacteria as commensals & pathogens of skin.
- 15- Mention 3 diseases of : corynebacterium, staph, strep, & their lab.
- 16- Pseudofolliculitis
- 17- Investigations of botryomycosis.